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[54] **AUTOMATIC WINDER USING ONE SETTER FOR EACH MANDREL, WHERE THE SETTERS ALTERNATE BETWEEN CONTROLLING THE MANDREL DRIVE AND THE CONTACT ROLL DRIVE**

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[52] **U.S. Cl.** **242/474.6**; 242/486; 242/486.3

[58] **Field of Search** 242/486, 486.3, 242/474.5, 474.6

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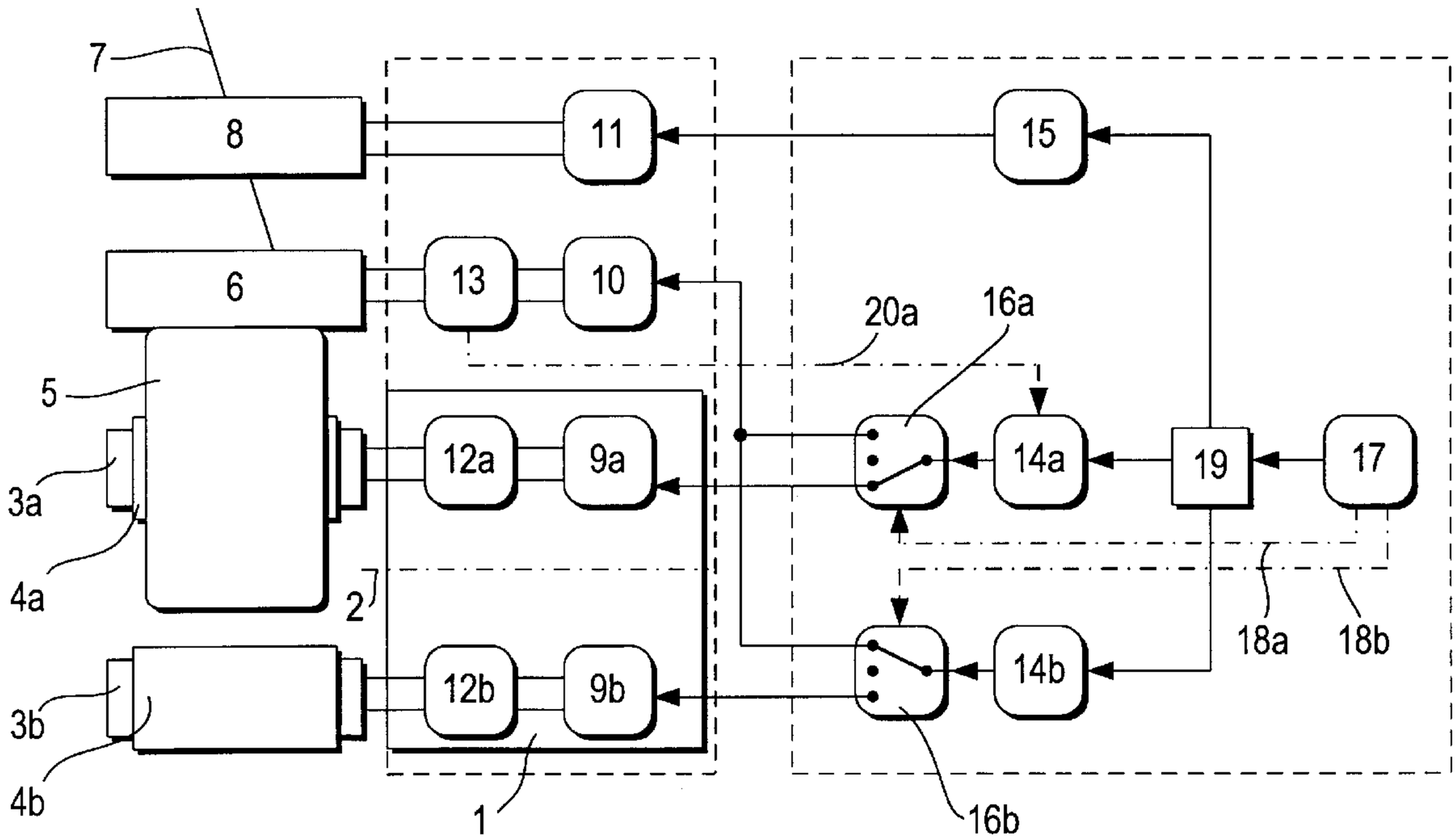
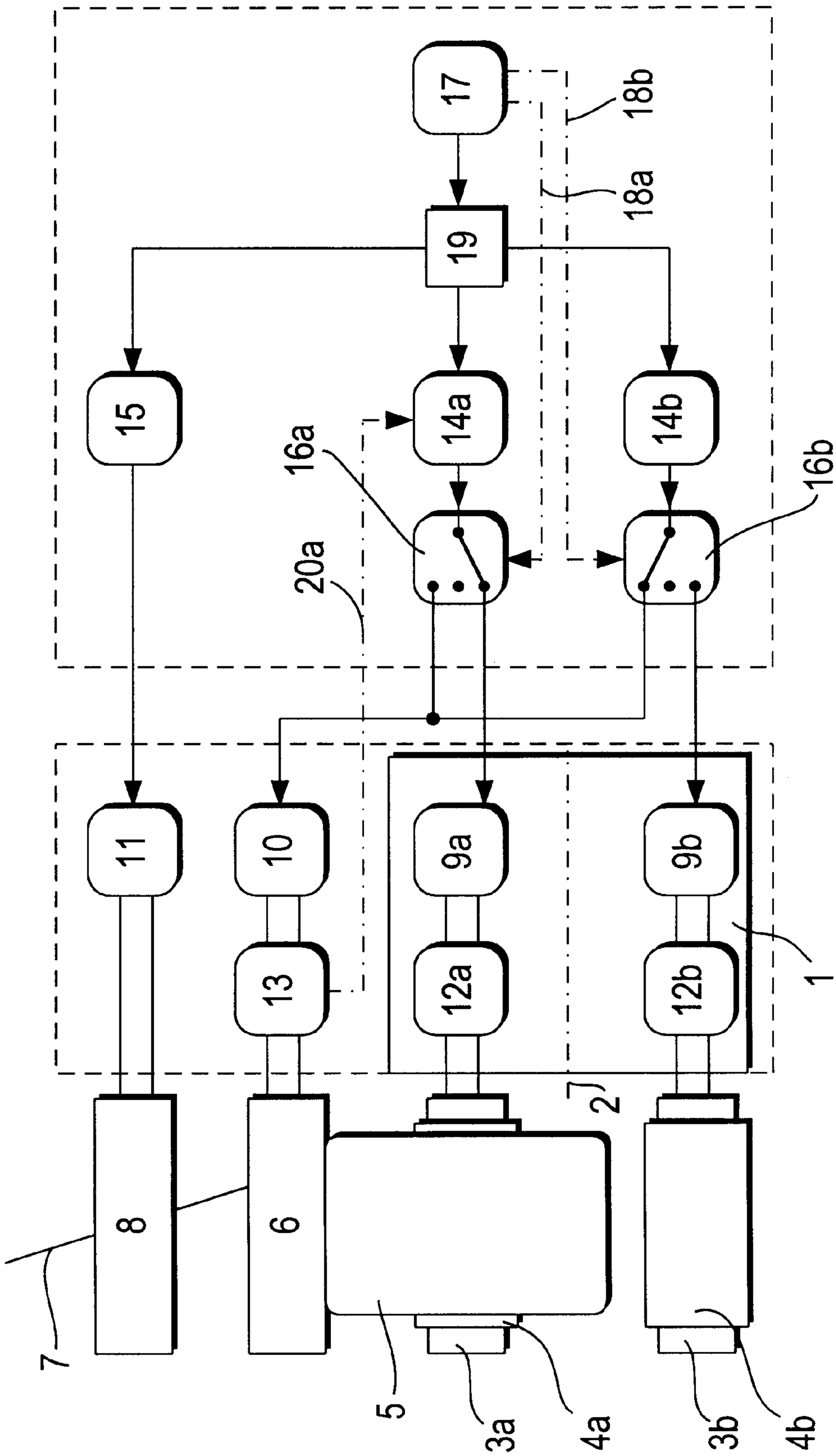
[57] **ABSTRACT**

In reversible head winders two bobbin holders (**3***a*, **3***b*) are alternately used. Each bobbin holder is coupled to a frequency-controllable drive (**9***a*, **9***b*) associated to a frequency converter (**14***a*, **14***b*). A sensing roller (**6**) which in operation is in contact with the surface of the bobbin (**5**) being formed is also equipped with a drive (**10**). According to the invention, each frequency converter (**14***a*, **14***b*) can be switched from the drive (**9***a*, **9***b*) of the associated bobbin holder (**3***a*, **3***b*) to the drive (**10**) of the sensing roller (**6**). The drive of the sensing roller (**6**) is electrically connected to the frequency converter (**14***b*) of the bobbin holder (**3***b*) which is momentarily in the ready position. In this manner one can spare a frequency converter for the drive (**10**) of the sensing roller (**6**).

3 Claims, 2 Drawing Sheets

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18b
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FIG. 1

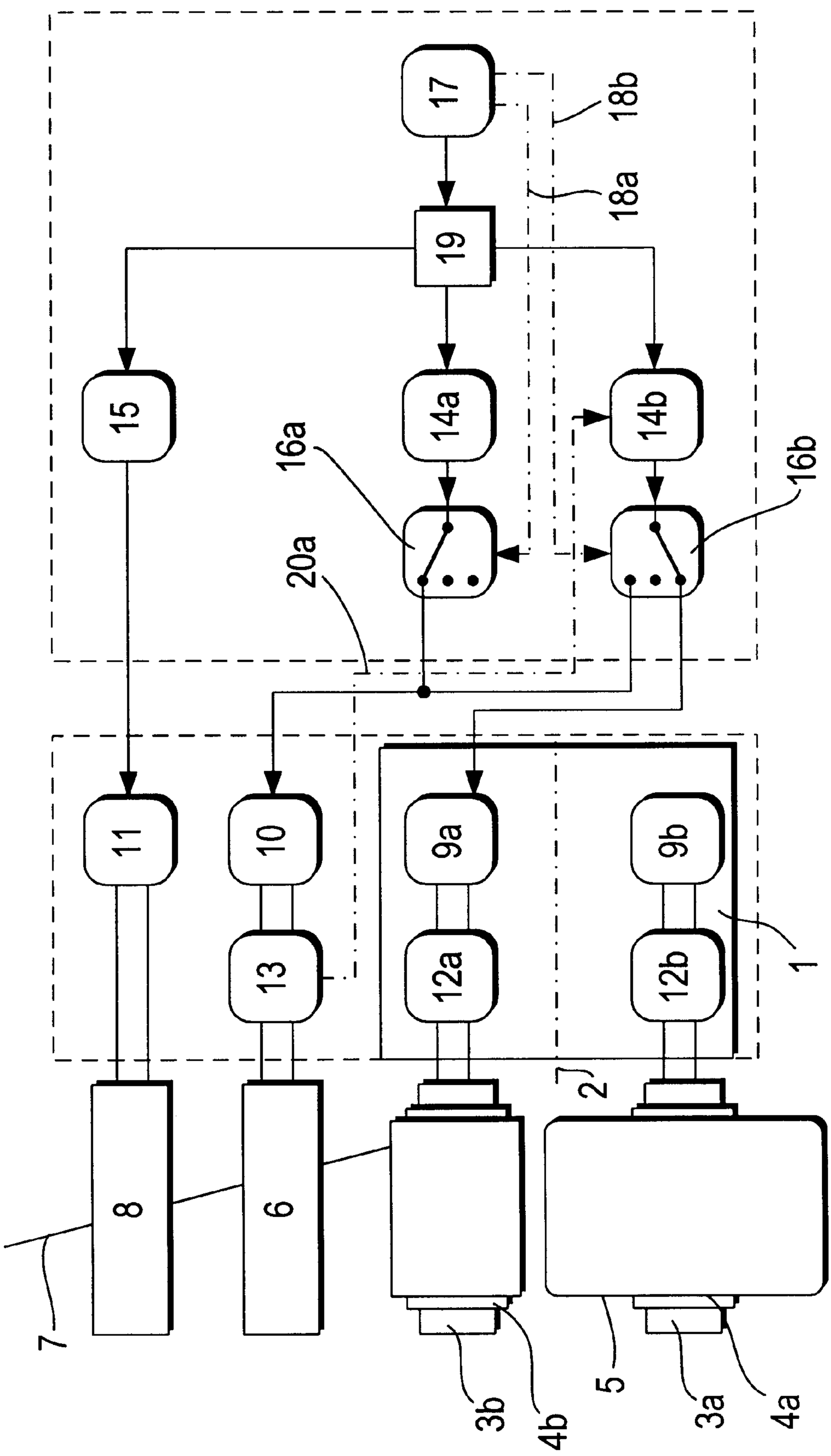
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FIG. 2

AUTOMATIC WINDER USING ONE SETTER FOR EACH MANDREL, WHERE THE SETTERS ALTERNATE BETWEEN CONTROLLING THE MANDREL DRIVE AND THE CONTACT ROLL DRIVE

BACKGROUND OF THE INVENTION

The invention relates to a device.

It is based on a device described in European Patent Disclosure EP 0 254 944 B1. In this known device, the drive mechanism of the feeler roller and the drive mechanisms of each of the two creels each need their own resetter. Each of the two resetters assigned to the creels can be switched over by a switch to the drive mechanism the feeler roller. When the machine is started up, the drive mechanism of the feeler roller is first supplied by the resetter that belongs to the creel in readiness at that time. Once the rotation of the feeler roller has stabilized, the drive mechanism is switched over to its own resetter. This connection continues until the machine is stopped.

A device for winding up yarns is also known from European Patent Disclosure EP 0 391 101 B1, in which a separate resetter is provided for the drive mechanism of the feeler roller and for each of the drive mechanisms of the two creels.

SUMMARY OF THE INVENTION

The object of the invention is to make an uninterrupted yarn winding device having less expensive than in the prior art.

In keeping with these objects, a device for uninterrupted yarn winding in accordance with the present invention has a drive mechanism of a filler roller which is electrically connected except for a brief period of time when the bobbin change takes place- with a resetter of a creel that is in the readiness position at that time.

By means of these characteristics, a separate resetter for the feeler roller is dispensed with. Only two resetters are provided for the total of three drive mechanisms of the two creels and the feeler roller.

The novel features which are considered as characteristic for the present invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. **1** and **2** show a device according to the invention in two different operating states.

DESCRIPTION OF PREFERRED EMBODIMENTS

Two creels **3***a*, **3***b* are mounted on an inverter head **1** which is pivotable about an axis **2**. In the state shown in FIG. **1**, the creel **3***a* is in the winding position and the creel **3***b* is in the readiness position. A bobbin tube **4***a* is seated on the creel **3***a*. A bobbin **5** is wound onto it and is shown being formed. An empty tube **4***b* rests on the creel **3***b*.

The jacket face of a feeler roller **6** rests on the surface of the bobbin **5**. A yarn **7** is delivered to the bobbin via a shogging device **8** in a known manner, in the process wrapping around the feeler roller **6** over part of its circumference.

The two creels **3***a*, **3***b*, the feeler roller **6**, and the shogging device **8** each have their own controllable-frequency drive mechanism **9***a*, **9***b*, **10**, **11**. Sensors **12***a*, **12***b*, **13** are provided for measuring the rpm of the two creels **3***a*, **3***b* and of the feeler roller **6**.

Each of the drive mechanisms **9***a*, **9***b* of the two creels **3***a*, **3***b* is assigned its own resetter **14***a*, **14***b* with a variable starting frequency, and the drive mechanism **11** of the shogging device **8** is assigned a resetter **15**. No separate resetter is provided for the drive mechanism **10** of the feeler roller **6**.

In the operating state shown in FIG. **1**, the drive mechanism **9***a* of the creel **3***a* that is in the winding position is connected electrically to the resetter **14***a* via a switch **16***a*, which is electrically actuated by a control unit **17** via a line **18***a*. The resetter **14***a* is designated as the "assigned" resetter for the drive mechanism **9***a* with which it is connected whenever the associated creel **3***a* is in the winding position. The same is correspondingly true for the resetter **14***b* with respect to the drive mechanism **9***b* and the creel **3***b*. A bus system **19** is provided for transmitting the signals of the control unit **17**.

The creel **3***b* in the readiness position is not driven. The associated resetter **14***b* is electrically connected to the drive mechanism **10** of the feeler roller **6** via a switch **16***b*, which is to be actuated by the control unit **17** via a line **18***b*. This resetter operates at a constant starting frequency, which is equivalent to the desired rpm of the feeler roller **6**.

A signal corresponding to the actual rpm of the feeler roller **6** is delivered by the sensor **13**, over a line **20***a*, to a governor, not shown in the drawing, that is integrated with the resetter **14***a*. The actual rpm of the of the feeler roller **6** is proportional to the surface speed of the bobbin **5**. The governor of the resetter **14***a* compares the actual value for the surface speed with the associated desired value, which is specified to the governor by the control unit **17** as a guide variable, and it varies the starting frequency of the resetter **14***a*, and thus also the rpm of the drive mechanism **9***a*, in such a way that the surface speed of the bobbin **5** is kept constant.

After a predetermined length of time or after a predetermined bobbin diameter is reached, the bobbin change initiated, either manually or preferably automatically. The resetter **14***b* is disconnected from the drive mechanism **10** of the feeler roller **6** by the switch **16***b*. The feeler roller **6** is kept at a substantially constant rpm by the bobbin **5**, which continues to press slightly against its surface.

The resetter **14***b*, after its starting frequency is reset to zero, is electrically connected to the drive mechanism **9***b* of the creel **3***b* that is still in the readiness position. Under the control of the control unit **17**, the starting frequency of the resetter **14***b* is increased. This brings the creel **3***c* to the starting rpm, at which the surface speed of the empty tube **4***b* seated on it precisely matches the speed of the arriving yarn **7**.

The inverter head **1** is now rotated about its axis **2** far enough that the yarn is transferred, in a known manner, from the full bobbin **5** to the empty tube **4***b* seated on the bobbin **3***b* (FIG. **2**). The line **20***a* is disconnected. Once the new bobbin, which begins to form on the tube **4***b*, has come into contact with the feeler roller **6**, a line **20***b* is connected between the sensor **13** and a governor integrated with the resetter **14***b*. The creel **3***a* with the full bobbin **5** is braked with the resetter **14***a*. The resetter **14***a* is disconnected from the drive mechanism **9***a* and set to a starting frequency that matches the actual value of the rpm of the feeler roller **6**. The

control unit **17**, by actuating the switch **16***a*, makes the electrical contact between the resetter **14***a* and the drive mechanism **10** of the feeler roller **6**.

This cycle is repeated constantly; the drive mechanism **10** of the control unit **6** is supplied in alternation, in each case essentially for the duration of one bobbin travel, by one of the two resetters **14***a*, **14***b*. Only during a brief period of time when the bobbin change is made is the electrical supply to the drive mechanism **10** interrupted. This interruption has no deleterious influence on bobbin formation.

What is claimed is:

1. A device for uninterrupted yarn winding, comprising two creels switchable between a winding position and a readiness position and including a first creel with a first control-frequency drive mechanism and a first resetter of variable starting frequency electrically connected with said first drive mechanism when said first creel is in the winding position, and a second creel having a second control-frequency drive mechanism and a second resetter of variable starting frequency electrically connected to said second drive mechanism when said second creel is in the winding position; a filler roller having a jacket face which contacts a surface of a bobbin that is being formed and is provided with a drive mechanism; and a switch operative for electrically connecting said drive mechanism of said filler roller with said first resetter when said first creel is in the readiness position, and electrically connecting said drive mechanism of said filler roller with said second resetter when said second creel is in the readiness position, said drive mechanism of said filler roller being electrically connected with a respective one of said resetters in the readiness position, except for a brief period of time when a bobbin change takes place.

2. A device as defined in claim **1**; and further comprising a programmed control unit operative for switching said resetter connected to said drive mechanism of said filler roller over to said drive mechanism of a respective one of said creels shortly before said creel is switched into said winding position, and switching another one of said resetters to said drive mechanism of said filler roller once the respective creel has been switched to said readiness position.

3. A device as defined in claim **1**; and further comprising a programmed control unit operative for disconnecting said resetter from said drive mechanism of said filler roller, resetting the starting frequency of said resetter to zero, connecting said resetter to said drive mechanism of a respective one of said creels, running the starting frequency of said resetter up to a starting rpm of a new bobbin, transferring the yarn from a full bobbin to an empty tube by rotation of an inverter head, braking another one of said creels by reducing an rpm of another one of said resetters, disconnecting said other resetter from said drive mechanism of said other respective creel, resetting the starting frequency of said other resetter to an rpm of said filler roller, and connecting said other resetter to said drive mechanism of said filler roller.

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